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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/930,449	10/07/1997	HIROYUKI ABE	JAO-39514	3024
25944	7590	12/29/2004	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			RAO, SHRINIVAS H	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 12/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

08/930,449

Applicant(s)

ABE ET AL.

Examiner

Steven H. Rao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 14 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-18 and 64-69 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1,2,4-18 and 64-69 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

Response to Amendment

Applicants' amendment filed on October 07, 2004 has been entered on October 13, 2004.

Therefore claims 1 and 12 as amended by the amendment and claims 2, 4-11, 13-18 and 64-69 as previously recited are currently pending in the Application.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 12 line the recitation " above a top of the chamber " renders the claim indefinite. It is not clear what is exclude/included by the recitation.

Appropriate correction is required to clarify what is included/excluded by the claim recitation.

Claims 13-18 and 65-69 depend from claim 12 and are rejected for at least depending upon claim 12.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

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obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2,4-18, and 64-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cathey et al. (U.S. Patent No. 5,329,207 herein after Cathey) and Nakamura (U.S. Patent No. 5,200,630, herein after Nakamura) both previously applied for response to Applicants' arguments see section below.

With respect to claims 1,12, (to the extent understood,) in addition to the teachings previously stated, the presently recited steps:

Setting a substrate in a chamber (Cathey col.4 lines 40-45,etc.) the substrate having a thin film having on a surface on of the substrate (Cathey fig. 3A # 8, col.5 lines 43-45; glass substrate - col. 1 lines 18-20).

Cathey does not specifically describe a portion of the wall of the chamber being projected in a direction orthogonally outward from the substrate, a window being provided at a top surface of the projected portion of the wall, the chamber extending along at least one direction parallel to the surface of the substrate, the projected portion of the wall being above the top of the chamber . (Claim 1) and

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A window being provided near a side wall of the chamber the window being disposed orthogonally outward from the surface of the substrate above a top of the chamber, the chamber extending along at least one direction parallel to the surface of the substrate (claim 12).

However Nakamura in figure 6 and col. 4 lines 37- 52, etc. describes a portion of the wall of the chamber being projected in a direction apart from the substrate, a window being provided at a top surface of the thin film to provide an enclosed space for the step of hydrogenating the grain boundaries to improve mobility of carriers.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include the a portion of the wall of the chamber being projected in a direction apart from the substrate, a window being provided at a top of the surface of the thin film taught by Nakamura in Cathey's method steps to provide an enclosed space for the step of hydrogenating the grain boundaries to improve mobility of carriers.

(Nakamura col. 5 lines 28-35 and Cathey col. 6 lines 57-59).

Nakamura in fig. 6 and col. 4 lines 39-40 describes a window being provided near a side wall of the chamber (claim 12).

The remaining limitation of claims 1 and 12 are :

Applying energy through the window to a surface layer of the thin film (Nakamura figure 6, col. 4 lines 45-50) (claim 1)

With a normal direction of the thin film shifted by an angle from a direction of an irradiation path (claim 12, Nakamura figure 6, col. 4 lines 55-65).

Melting at least the surface layer under a mixed gaseous atmosphere by the applied

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energy (See Cathey Fig. 3D col. 5 lines 63-65) the thin film. (Cathey col.2 line46, etc.) and crystallizing at least the surface of Cathey in col. 4 line 25 describes the thin film to be a semiconductor film (claim 2) .

Cathey inherently discloses atmospheric conditions because it does not mention a specific atmospheric condition. (claim 4).

Nakamura in col. 4 lines 54-68 discloses the use of an inert gas along with hydrogen (Claim 5).

The recitation of claim 6 (hydrogen halide), claims 7-84 Argon), is well known in the art.

The recitation of claims 9-1 1, Cathey discloses high-energy light beam Easer source to melt (Cathey col. 6 lines 19-20).

The recitation of claim 12 (gaseous atmosphere containing a component element (see Cathey col. 6 lines 9-15).

However as shown above claim 12 is not allowable therefore claims 13-18 are also not allowable.

Claims 13 and 14 repeat the steps of claims 4 and 5 and is rejected for the same reasons.

Claim 15 the use of Silane is well known.

Claims 16-18 repeat the steps of claims 9-1 1 and are rejected for reasons stated above.

With respect to claim 64, Nakamura describes the method of forming a crystalline film according to Claim 1, wherein the mixed gaseous atmosphere contains a

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hydrogen-containing gas and an inert gas. (Nakamura col.4 lines 54-68)

With respect to claim 65, Nakamura describes the method of forming a crystalline film according to Claim 12, wherein at least the surface layer of the thin film is melted and crystallized in a mixed gaseous atmosphere that contains an inert gas and hydrogen molecules. (rejection of claim 11 and Nakamura col.4 lines 54-68)

With respect to claim 66, Nakamura describes the method of forming a crystalline film according to Claim 12, wherein the mixed gaseous atmosphere contains an inert gas and a hydrogen halide. (Nakamura col. 4 lines 64-68).

With respect to claims 67 and 68 , Nakamura describes the method of forming a crystalline film according to Claim 66, wherein the inert gas is a rare gas. (Nakamura col. 4 line 68- XeCL laser is well known to include rare gas, including argon - see e.g USP 4,802,183).

With respect to claim 69, Nakamura describes the method of forming a crystalline film according to Claim 12, wherein a part of the energy enters the thin film, and another part of the energy is reflected from the thin film along a reflection path in the chamber, and course changing means changes a course of reflected energy to irradiate the thin film again with the reflected energy. (Nakamura in fig. 6 and col. 4 lines 50-53 teaches the gas flow (H) from the thin film i.e. the specular component of the reflected energy which goes straight back to the source, and a course changing means (mirror 58, fig. 3 of Nakamura that changes a course of reflected energy to irradiate the thin film again with reflected energy).

Response to Arguments

Applicant's arguments filed 10/13/2004 have been fully considered but they are not persuasive for the following reasons :

Applicants' contention that Cathey and Nakamura do not disclose the steps of :

" a method of forming a crystalline film, including setting a substrate in a chamber, the substrate having a thin film on a surface of the substrate, a window being provided, portion of the wall, the chamber extending along at least one direction parallel to the surface of the substrate, the projected portion of the wall being above the top of the chamber , chamber the window being disposed orthogonally outward from the surface of the substrate above a top of the chamber , the chamber extending along at least one direction parallel to the surface of the substrate applying energy through the window to a surface layer of the thin film, melting at least the surface layer of the thin film under a mixed gaseous atmosphere by the applied energy, and crystallizing at least the surface layer of the thin film, is not persuasive for reasons et out under the rejection above wherein all these steps were shown to be obvious in view of the applied art.

Applicants' by attempting to point what individual references allegedly lack are engaging in impermissible piece meal analysis.

As shown above the combination of Cathey (forming crystalline film on substrate- col. 2 lines 44-47) and Nakamura (a chamber for producing film on substrate). Nakamura in figure 6 shows the chamber as having window at a top part of the chamber wall that projects orthogonally outward from the substrate.

Applicants' contention that there is no motivation to combine the teachings of

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Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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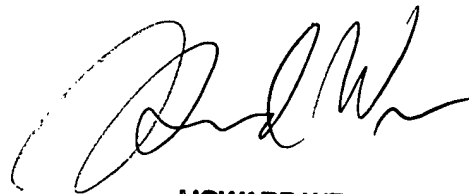
Any inquiry concerning this communication or earlier communication from the examiner should be directed to Steven H. Rao whose telephone number is (571) 272-1718. The examiner can normally be reached on Monday- Friday from approximately 7:00 a.m. to 4:30 p.m.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956. The Group facsimile number is (703) 308-7724.

Steven H. Rao

Patent Examiner

December 23, 2004.



**HOWARD WEISS
PRIMARY EXAMINER**

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